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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/572,857	11/21/2006	Takehiko Yamashita	043887-0192	9389

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EXAMINER	
LISTVOYB, GREGORY	

ART UNIT	PAPER NUMBER
1796	

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06/18/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/572,857	YAMASHITA ET AL.	
	Examiner	Art Unit	
	GREGORY LISTVOYB	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 March 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8-10, 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mohanty et al (US 2003/0216496) herein Mohanty or Ohme et al (US 2004/024803) herein Ohme in combination with Fumitomo (JP2002-241566) herein Fumitomo or Gilman et al (Fire retardant additives for polymeric materials 1. Char formation from silica gel –potassium carbonate. Thirteenth meeting of the UJNR panel on fire research and safety, march 13-20, 1996, vol 2, NIST, 1997), herein Gilman and Lee et al (US 6337363) herein Lee (necessitated by Amendment).

Mohanty discloses a resin composition comprising polylactic acid (Abstract) or lactic acid copolymer (see line 0023), and a flame retardancy-imparting component (see line 0054), meeting the limitations of Claims 8 and 9.

Regarding Claim 10, Mohanty discloses Phosphorous compounds and various inorganic compounds as flame retardants.

In reference to Claims 13-15, Mohanty teaches melt-kneading process using of the above system (see line 0113), with following compression molding of the composition (see line 0115) and producing a molded article.

Ohme teaches polylactic discloses a resin composition comprising polylactic acid (Abstract), polybutylene succinate (see line 0091) and a bromine or phosphorus containing flame retardancy-imparting component (see line 0173).

Ohme teaches melt-kneading process using of the above system (see line 0018), with following compression molding of the composition (see Abstract and line 0018) and producing a molded article.

Mohanty or Ohme do not disclose flame retardancy-imparting component.

Gilman teaches highly effective fire retardant based on potassium carbonate on porous silica gel support for wide variety of polymers, including cellulose (see Abstract). He also discloses that effective fire retardants on silicon based materials (see page 261). The performance of the above fire retardants is comparable with regular retardancy-imparting components. However, silica gel and potassium carbonate are significantly less expensive compare to regular flame retardants. Therefore, it would have been obvious to a person of ordinary skills in the art to use silica-potassium

carbonate fire retardants instead of regular additives, providing more economical process and composition.

Fumitomo teaches resin composition containing silica-gel and flame retardant, which is halogen-based component on antimonous oxide support (see Abstract). Fumitomo teaches that other inorganic substrates, such as aluminum hydroxide, magnesium hydroxide, boric acid and zinc borate can b used (see line 0009). The above inorganic materials are known as flame retardants. Their use reduces total amount (both organic and inorganic) of flame retardants needed, which provides more economical process. In addition, the above retardants have an environmental benefit, since it reduces the amount of harmful gases formed by halogenated compound.

Therefore, it would have been obvious to a person of ordinary skills in the art to use Fumitomo's organic flame retardants on inorganic support in Mohanty or Ohme's compositions, since it providing more economical process and composition and reduces the amount of harmful gases formed by organic retardant.

Mohanty or Ohme does not teach new limitation of claims 8 and 14 claiming that organic frame retardant is supported before mixing with the polymer .

Lee teaches an epoxy composition with Novolac/Silica flame retardant. The method of preparation (see Preparation Example) disclosed the following sequence of the ingredients adding:

First, TEOS hydrolyzed in Hydrochloric acid, giving porous Silica particles and then Novolac flame retardant added in Isopropanol.

The above procedure gives hybrid flame retardant, where Novolac is placed in Silica support (see Column 3, line 25). The hybrid flame retardant then added to the polymer (see Example 1).

The above procedure gives environmentally friendly flame retardant. In addition, combined product is easier to use in plant facility (compare to dry mixing of the components). Also, solution mixture provides more intimate mixing of the components, which can increase synergic silica/organics action , disclosed by Gilman

Therefore, it would be obvious to a person of ordinary skills in the art to introduce flame retardant into polymer after solution-mixing of its components, since it provide environmentally friendly product with possibly more pronounced synergic effect.

Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mohanty or Ohme in combination with Fumitomo or Gilman and Dorfman et al (US 3983185) herein Dorfman and Lee (necessitated by Amendment)...

Mohanty or Ohme disclose a resin composition comprising polylactic acid or its copolymer or composition, containing polybutylene succinate and a flame retardancy-imparting component. (see discussion above).

Gilman or Fumitomo or Lee teaches flame retardant on porous inorganic support.

Gilman teaches highly effective fire retardant based on potassium carbonate on porous silica gel support for wide variety of polymers, including cellulose (see Abstract). He also discloses that effective fire retardants on silicon based materials (see page 261). The performance of the above fire retardants is comparable with regular retardancy-imparting components. However, silica gel and potassium carbonate are significantly less expensive compare to regular flame retardants. Therefore, it would have been obvious to a person of ordinary skills in the art to use silica-potassium carbonate fire retardants instead of regular additives, providing more economical process and composition.

Fumitomo teaches resin composition containing silica-gel and flame retardant, which is halogen-based component on antimonous oxide support (see Abstract). Fumitomo teaches that other inorganic substrates, such as aluminum hydroxide, magnesium hydroxide, boric acid and zinc borate can b used (see line 0009). The above inorganic materials are known as flame retardants. Their use reduces total amount (both organic and inorganic) of flame retardants needed, which provides more

economical process. In addition, the above retardants have an environmental benefit, since it reduces the amount of harmful gases formed by halogenated compound.

Therefore, it would have been obvious to a person of ordinary skills in the art to use Fumitomo's organic flame retardants on inorganic support in Mohanty or Ohme's compositions, since it providing more economical process and composition and reduces the amount of harmful gases formed by organic retardant.

Lee teaches an epoxy composition with Novolac/Silica flame retardant. The method of preparation (see Preparation Example) disclosed the following sequence of the ingredients adding:

First, TEOS hydrolyzed in Hydrochloric acid, giving porous Silica particles and then Novolac flame retardant added in Isopropanol.

The above procedure gives hybrid flame retardant, where Novolac is placed in Silica support (see Column 3, line 25). The hybrid flame retardant then added to the polymer (see Example 1).

Mohanty or Ohme do not disclose the flame retardancy-imparting component is acetylacetonatoiron or acetylacetonatocopper.

Dorfman disclose a composition comprising a polyester and flame retardants, which are acetylacetonatoiron (see Column 9, line 65) or acetylacetonatocopper (see Column 10, line 35).

Dorfman teaches that the above flame retardants have an advantage over regular ones (i.e. phosphorus-based), since they retain translucency of the polymer composition (see Column 9, line 5).

Therefore, it would have been obvious to a person of ordinary skills in the art to use acetylacetonatoiron or acetylacetonatocopper instead of traditional flame retardants in the cases, where retaining translucency of an article is important.

In addition, it is a prima facie obvious to add a known ingredient for its known function (see In re Linder 173 USPQ 356).

Response to Arguments

Applicant's arguments filed 3/11/2009 have been fully considered but they are not persuasive.

Applicant argues that "This is at least because rather than teach the use of a thermoplastic resin as recited in the instant claims, Lee teaches the use of an epoxy resin composition that is a thermoset. Thus, Lee effectively teaches away from what is presently claimed".

However, Lee applies in the Rejection as a secondary reference in order to demonstrate that premixing of Silica and a flame retardant is known in Prior Art.

Primary references Mohanty and Ohme both teach the compositions comprising biodegradable thermoplastic polymer and flame retardant.

Applicant argues that the resin composition as recited in the present claims is a thermoplastic resin composition and is provided in a form of solid or relatively hard substance, whereas Lee teaches a solution of flame retardant in the resin.

However, the solid flame retardant is not claimed. Lee teaches that the resin composition is diluted with suitable organic solvent, followed by coating and subsequent heating (see Column 3, line 45). Thus, it is clear that the solvent used should evaporate during the processing of the composition. In addition, the primary references (Mohanty and Ohme) teach a solid flame retardant added to a solid polylactic acid.

Applicant argues that Ohme does not teach or suggest that the flame retardant is supported before mixing with the polymer.

Lee teaches an epoxy composition with Novolac/Silica flame retardant. The method of preparation (see Preparation Example) disclosed the following sequence of the ingredients adding: First, TEOS hydrolyzed in Hydrochloric acid, giving porous Silica particles and then Novolac flame retardant added in Isopropanol. The above procedure

gives hybrid flame retardant, where Novolac is placed in Silica support (see Column 3, line 25). The hybrid flame retardant then added to the polymer (see Example 1).

The above procedure gives environmentally friendly flame retardant. In addition, combined product is easier to use in plant facility (compare to dry mixing of the components). Also, solution mixture provides more intimate mixing of the components, which can increase synergic silica/organics action , disclosed by Gilman.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY LISTVOYB whose telephone number is (571)272-6105. The examiner can normally be reached on 10am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James J. Seidleck/
Supervisory Patent Examiner, Art Unit 1796
GL